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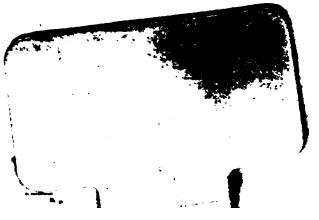

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THAMES TUNNEL.

1824.

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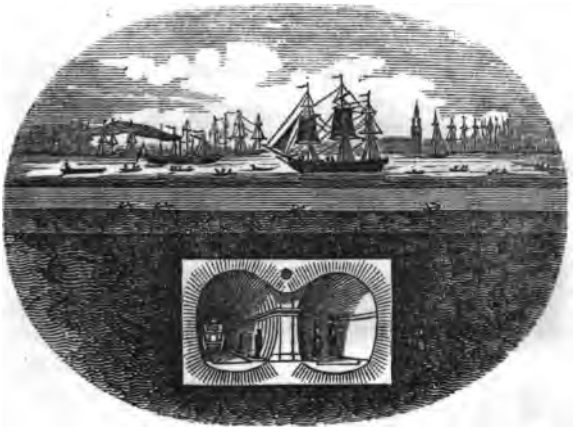
THE

THAMES TUNNEL.



INCORPORATED BY ACT 5 GEO. IV.

Dated June 24, 1824.

London:

PRINTED BY HENRY TEAPE, TOWER HILL.

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THAMES TUNNEL.

A TUNNEL under a River of the magnitude of the Thames, which now bears on its bosom the Columbus of 3690 tons!! the largest ship in the world, will appear, perhaps, to some persons, of not very easy comprehension. As this is a novelty connected with commerce the engraving is intended to convey a more complete idea of this grand undertaking than could be given by mere description. The cut represents the Thames as seen from the north shore, with Rotherhithe Church in the distance on the south. A ship is seen going down the river, and a steam-boat proceeding up the river; and the subaqueous and subterraneous archways are from the one to the other shore. It will be thus seen that the Tunnel will consist of two archways, and, in order that there may be no obstruction to carriages, those going from the north to the south shore will pass through one, while those from the south to the north will pass through the other archway. These passages will be paved, or macadamized, and there will be distinct footpaths for foot passengers. In the centre, between the two archways, and dividing the two roads, will be a line of numerous arches of communication, spacious enough to admit of persons passing from one road to the other; and in each of

these arches will be fixed a strong gas-light. The approaches to the entrance of the Tunnel will be by descents of easy declivity, not exceeding four feet per hundred feet; one, smaller, for pedestrians; another larger for carriages; and so easy will the descent be, that the heaviest loaded waggon will never need to lock a wheel. The descent from the north side will be near to the end of Old Gravel-lane, at the eastern end of the London Dock; and, on the south side of the river, from a spot near to Rotherhithe Church. The bed of the river has been rigidly examined by frequent and deep borings, in order to ascertain the nature of the strata, and the results are highly encouraging, the deep parts being uniformly of a tenacious hard blue clay.

In order so to effect an excavation 35 feet in breadth by 20 feet in height, the Engineer and Patentee of the plan proposes to have the brickwork of the Tunnel preceded by a strong iron framing of corresponding dimensions. The object of this framing is to support the ground, not only in front of the brickwork, but to protect, at the same time, the work of excavation on all sides. The body of the Tunnel, which is to be constructed in brick, is intended to be fitted close to the ground; and in proportion as the iron framing is moved forward, so the brick-work is made to keep close up with it. But as this framing could not be forced forward all in one body, on account of the friction of its external sides against the surrounding earth, it will be composed of twelve perpendicular frames, which will admit of being moved singly and independently of each other, in proportion as the ground shall be worked away in front. These several frames are to be provided

with such mechanism as may be necessary to move them forward. It is to be observed, that six alternate frames are stationary, while the six intermediate ones are left free, for the purpose of being moved forward when required; these, in their turn, are made stationary for relieving the six alternate ones, and so on. Thus the progressive movement of the framing can be effected.—In order that a sufficient number of hands may be employed together with effect and security, each frame is divided into three small distinct apartments which may properly be denominated cells. By this disposition the twelve frames form thirty-six cells in which the men are to operate while excavating the ground. The ground in front of each cell will be kept from falling in by means of a powerful shield consisting of small boards, strongly secured by the frames. It is from within these cells that each workman is to cut out the ground, just in the way that he would do if he were to cut a recess into a wall for the purpose of fitting a closet into it; but, with this precaution, that he is to remove each board, one after the other, and replace each in succession as he cuts the portion of the ground corresponding with it. When he has thus gained from three to six inches over the whole surface (an operation which it is expected may be made in all the cells nearly in the same time) the frames are to be moved forward, and so much more brick-work added to the body of the Tunnel. Thus intrenched and secure, 36 men may be made to carry on an excavation which is 630 feet superficial area, in regular order, and in uniform quantities, with as much facility and safety as if one drift only of 19 feet square were to be opened by one man.

Should nothing unforeseen prevent it, this novel

communication is expected to be opened in about two years.

It will be obvious to every person acquainted with the Thames that no bridge could be permitted to cross it where the Tunnel is designed to be made unless it were of a height so great that ships could sail beneath it. Such a bridge was once projected, but the design was soon abandoned. The Tunnel may be regarded as a bridge reversed, and as a channel of intercourse between the two shores, at once commodious, and suited to its locality. Such an intercourse has been for a long time a desideratum, and will open a free, and probably an important, communication between the counties of Middlesex, Essex, Kent, and Surrey, and the several national and commercial establishments on either shore, and which, in time, will give birth to improvements of no small magnitude.

On the 2d of March, 1825, the Chairman, attended by the Directors, Auditors, Engineer, Surveyor, and many friends of the undertaking, proceeded to Rotherhithe to commence this national work.

The preparations, made a little to the eastward of Rotherhithe Church, shewed several circles of piles; on one circle of which, rested a timber platform, destined to form the base of a cylindric structure, of brick, which is to be fifty feet diameter, three feet thick, and forty feet high. The platform is strongly iron-shod for the purpose of penetrating into the ground. The brick-work to be set in Roman cement, and to be secured by

horizontal *bond hoops*, let in the courses at short intervals from each other. The whole to be bound vertically by means of forty-eight iron ties, the aggregate strength of which would be sufficient to lift the whole fabric, although it will exceed one thousand tons in weight.

This circular structure (which may be compared to the curb used by well-diggers) is intended to be crowned by a steam engine of thirty horse power, with a proportionate boiler, and destined to work a bucket-chain, by means of which the excavation is to be effected, without pumping the water out, as a dredging machine operates through the river; and to penetrate through the stratum of sand and water which forms the banks of the Thames, and reach the bed of blue clay through which the Tunnel is to be carried beneath the river. This circular structure which is denominated a shaft, is to be carried down below the lowest level of the work, probably to a depth of seventy or eighty feet, for the advantage of draining the work.

The lofty scaffolding, crowded by spectators, bore ensigns which waved in the brilliancy of a warm and cheerful sun: the surrounding houses were also crowded on their roofs and in their windows: the inner inclosure was filled with gentlemen and ladies; when the Chairman, Directors, and Auditors, and the Officers of the Company, came with the Curate, Churchwardens, Overseers, and other Gentlemen of the Parish, in procession from the Company's wharf to lay the Foundation-Stone of the Shaft whereby Foot Passengers are to descend to the future Tunnel.

As soon as every thing was prepared, and silence was obtained, the Chairman thus addressed the respectable assembly:—

"Ladies and Gentlemen,

"It is, I apprehend, unnecessary to enter into much detail on the purpose of our assembling here this day. It may be sufficient for me shortly to remind you, that we are met to witness the commencement of an undertaking of no less importance than to create an easy and safe intercourse between the opposite shores of a large River, without any interruption to that wonderful and crowded navigation for which the Thames is pre-eminent beyond even the most celebrated of its rival streams.

"The mode proposed for establishing this communication is, as regards either the means to be employed, or the scale on which it is to be executed, entirely new. The Curb, on which our operations are about to commence, will form the Base of a circular brick Tower, which, when raised to the height of nearly forty feet, will be gradually sunk *entire*, until, at about that depth, it shall get embedded in the stratum of blue clay, which we have ascertained, by boring, to be there found, extending continuously beneath the channel of the River to the opposite side, and probably very far beyond. When arrived at the proper Level, a passage will be pierced, and a Tunnel of two parallel arches in substantial brick work, will be driven across to the farther shore.

"An ancient writer, proverbial for his wisdom, in a Book which we all regard with laudable reverence, addressing those who had the habit of censuring indiscriminately the age in which they lived, has these remarkable words:—'Say not,' he advises, 'what is the 'cause that the former times were better than these; for 'thou dost not enquire wisely concerning this matter.' To the advanced age in which we live, his words are especially applicable; and we may confidently affirm,

'that Our Days' are most manifestly superior to those which are gone by.

"Time was, when the laborious enquirer into the secrets of nature, immured in his closet or his laboratory, was far more anxious to preserve the honour of his discoveries to his own name, than to communicate them for the benefit of mankind: and too frequently the valuable results of his labours either perished with him in one common grave; or, at best, were only partially and incidently communicated to the world. *Now*, these, which we may designate as the bye-paths of science, are happily dilated into broad highways, in which the multitude may freely and advantageously expatiate. Those who formerly could only, under close inspection, execute with implicit obedience the task imposed by the superior mind, are often found to comprehend the principles of the operation; sometimes, even to afford no mean aid in the completion of the project; and the philosopher, emerging from his study to bring his long contemplated theories to the test of experiment, instead of mere blind instruments, finds congenial talent more than half prepared to realize his plans.

"Nor is this a fleeting advantage.—Institutions, on a principle never dreamt of before now, have been established for the express purpose of enabling the artizan to advance himself in the scale of society. By the allotment of a small portion of his weekly earnings he may enjoy the means of acquiring a knowledge of the foundations of the art he may have chosen; until, so qualified, he may rise to the top of his profession, and, perhaps, become an honour and a blessing, not to his family and his country only, but, in his degree, even to the world.

"But we have much more to boast. Discoveries, equally splendid and useful, are the ornaments of our age. Out of that steam, which, issuing from the spout of a tea-kettle, served, formerly, only to amuse the eye, or to excite a momentary curiosity, Chymical Science, in its contemplation of causes and effects, has elicited an agent, whose powers applied in just combination with the mechanical powers in the spindle, loom, mine, and forge, have elevated our Country to a rank unprecedented among the nations of the globe—by means, too, as laudable as the end is glorious;—and proceeding with rapid strides in the path of improvement, has, of late, superseded the wind for the purposes of navigation;—drives the bulky vessel in a direct course across the pathless ocean, regardless of the opposing elements, and bids fair, ere long, to establish a communication with the remotest corners of the earth, easy and expeditious beyond the imagination of our ancestors. It has seized the spirit of the coal, hovering in the mine, and often seen creeping in a beautiful blue flame over the rugged surface of the shattered rock, and brought it into subjection; on the one hand, restraining its destructive energies with a curtain of iron, and with the other, compelling it to illuminate our darkness with myriads of brilliant stars, already dispensing their pure lights over half the cities of Europe. Nor does it stop even here. It has exhibited yet greater wonders to our contemplation:—It has analysed the elements, regarded for ages as simple and uncompounded; has explained the composition of the air we breathe, of the water we drink, of the fire by which we are warmed; and, by the combination of substances impalpable and invisible, has exhibited solidity to the touch, and extension to the eye.

"From these immense progressions of knowledge and power, we derive the highest confidence of success in our bold and novel undertaking. Difficulties may arise, and ought to be expected.—Those which are obvious to human foresight have been anticipated and provided against. To overcome any hitherto unforeseen obstacles which may present themselves, we depend on the talents and zeal which are devoted to our service in the person of our experienced, able, and scientific Engineer, whose great works public and private, already completed, afford a solid foundation for our confidence that this, also, will be productive of honour and advantage to the country, of benefit to the subscribers, and of additional elevation to his own well established character.

"But, when men have done their utmost, it belongs to a Superior Power to prosper their efforts: to Him we owe the faculties by which we are enabled to discover and to avail ourselves of those mighty agents which He has created and employs: and I trust that this assembly are seriously disposed to join the reverend and respected Minister of the Parish, in imploring the divine blessing on an undertaking, in the success of which multitudes are deeply concerned, and whose eventual consequences may be of so high and so general importance."

The Rev. Mr. Hardwick then humbly implored the blessing of Almighty God on this great Undertaking, designed to be a benefit and comfort to His creatures; and that it might be for the honour of the kingdom, the happiness of the parish, and the general prosperity of the neighbourhoods.

The Chairman being supplied with a silver trowel;

and, having inspected the drawings exhibited by the Engineer, he spread the cement, directed the lowering of the hollowed granite stone—deposited therein a brass plate, engraved with the names of the Institution, of the Directors and Officers, and also some of the present current coin; and having with the mallet and level adjusted and proved the correctness of its position, and covered the same, declared the foundation stone to be laid. He was then presented with a bumper of wine, and drank success to the "Thames Tunnel:" This was received by the gentlemen, and answered by them, and the multitude of spectators, with three times three rattling and hearty British cheers, while the church bells rang an enlivening peel, and the band struck up the airs of God save the King and Rule Britannia. The workmen proceeded to brick up the foundation-stone, and the Directors, with the Ladies, returned to the wharf, and were entertained with a cold collation in the Carpenters loft, which had been tastefully fitted up with laurels and other evergreens, and decorated with various flags. Among the numerous guests were the following gentlemen:—

Mr. Alderman Atkins,
Mr. Alderman Heygate,
Admiral Sir Edward Codrington, K.C.B.
Sir Alexander Crichton,
W. H. Wollaston, M.D. F.R.S., &c. &c.
Captain Lyon, of H.M.S. Griper, (just returned from the voyage of Polar discovery,)
Lieut. Col. Gant,
James Steevens, Esq. Civil Engineer,
&c. &c. &c.

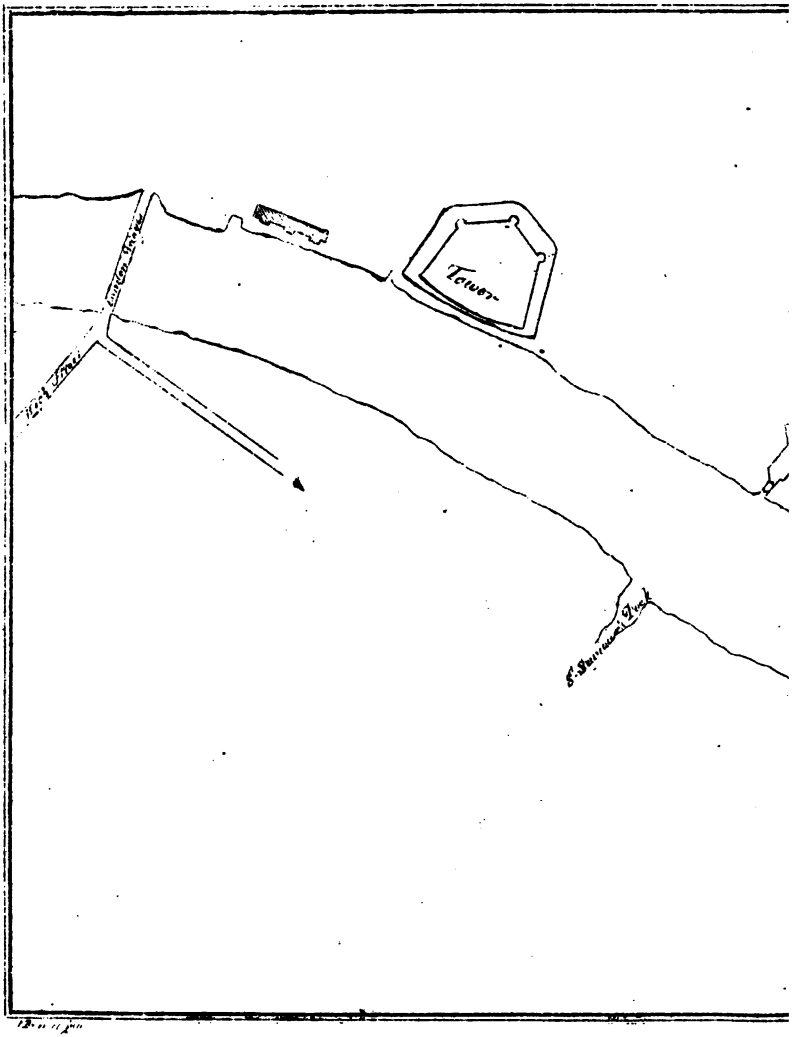
The workmen were treated with a supper at the

Europa Inn, that they also might continue their work with a pleasing remembrance of its happy commencement.

To those who may, formerly, have entertained any doubts of the practicability of carrying the contemplated work into effect, the rigid examination which the bed of the river has undergone, and the Report made thereupon, cannot but prove satisfactory, and will, it is hoped, have put an end to those doubts. With a substance of 15 feet of such strata as that above described intervening between the bed of the river and the roof of the Tunnel, supported by substantial and well cemented brick-work, no fears need be apprehended of the water penetrating; and thus the greatest obstacle to the work being accomplished is completely overcome, and the obvious utility of such a channel of communication between the opposite shores of the river affords fair grounds to anticipate a very favorable result to the subscribers.

The shaft now begun is intended for foot passengers. Carriages will descend by a larger descent, which will not be made till the Tunnel shall be in sufficient progress.

THAMES TUNNEL OFFICE,
1, WALBROOK BUILDINGS,
12 *April*, 1825.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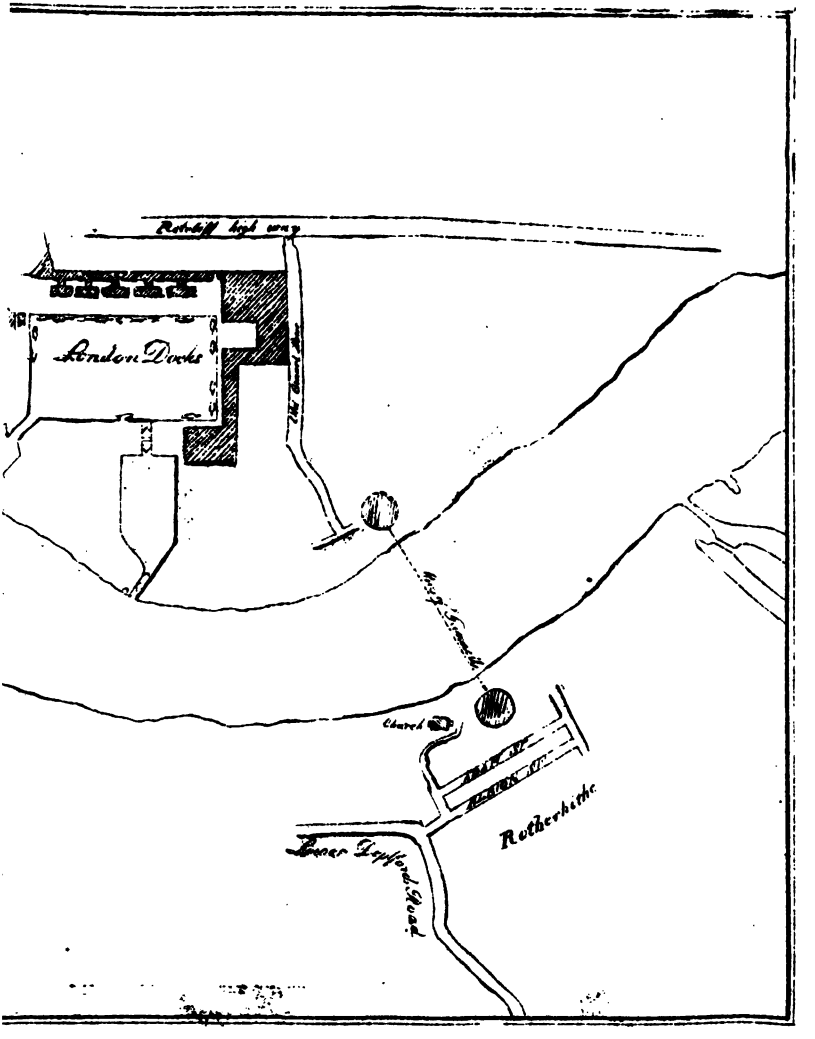
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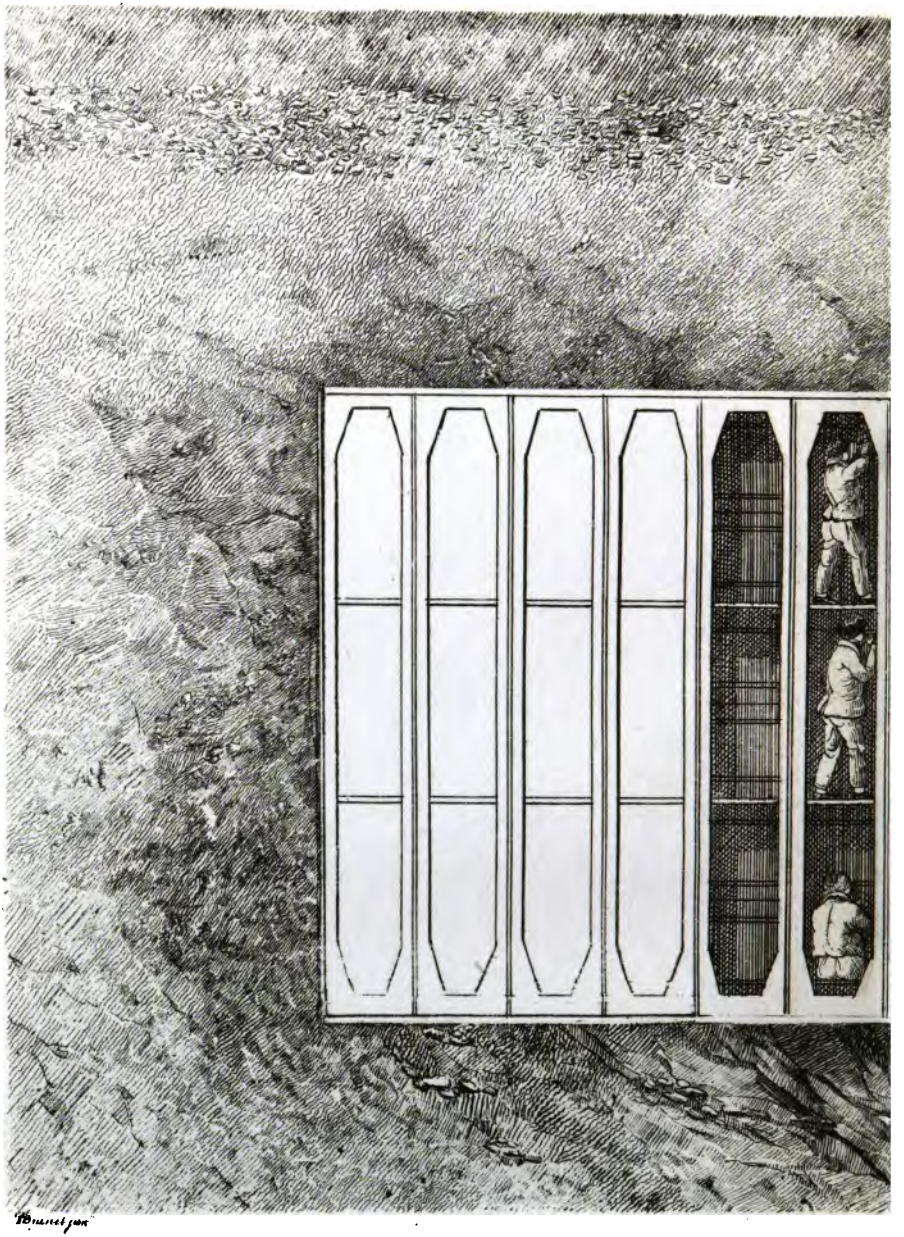
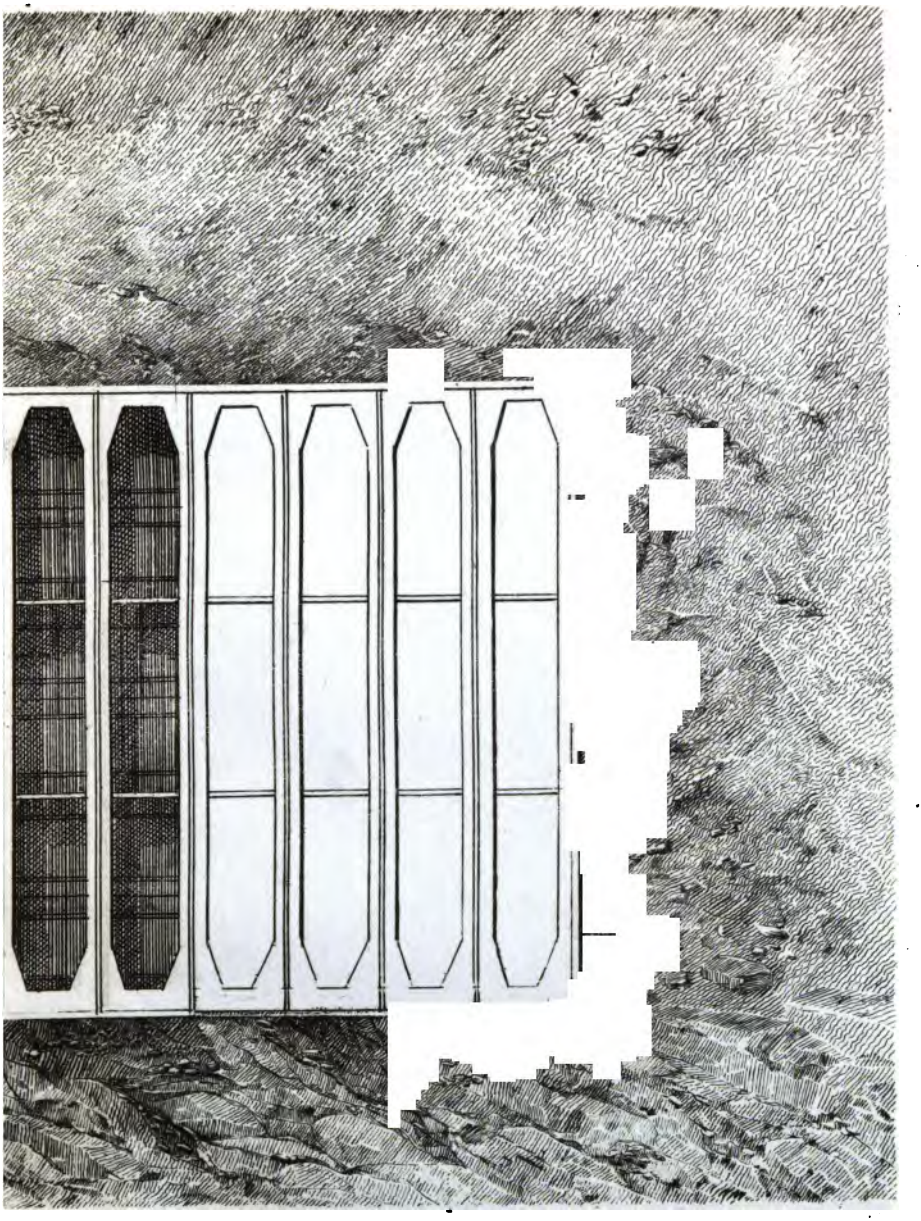


Elevation of the Framing shewing the Cells in three o



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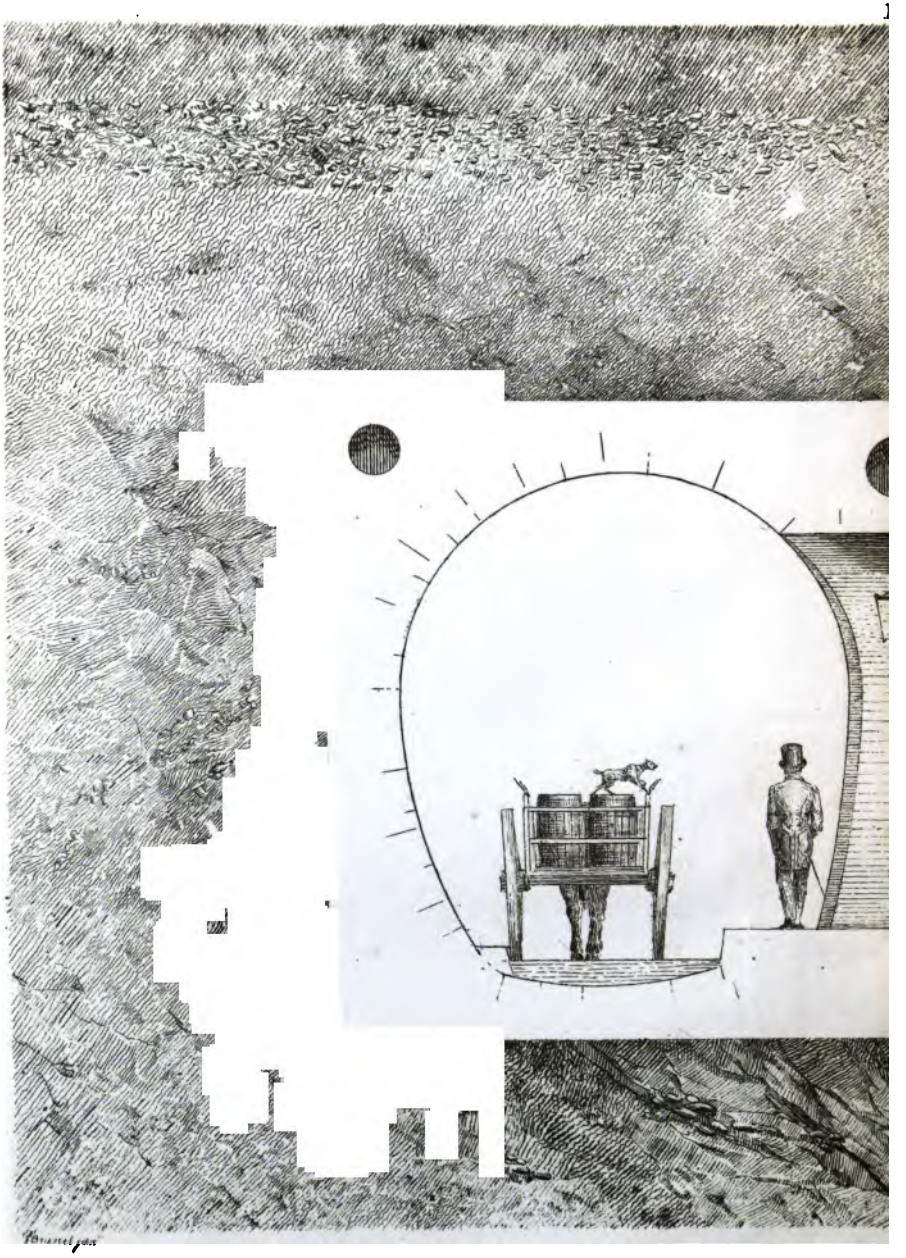
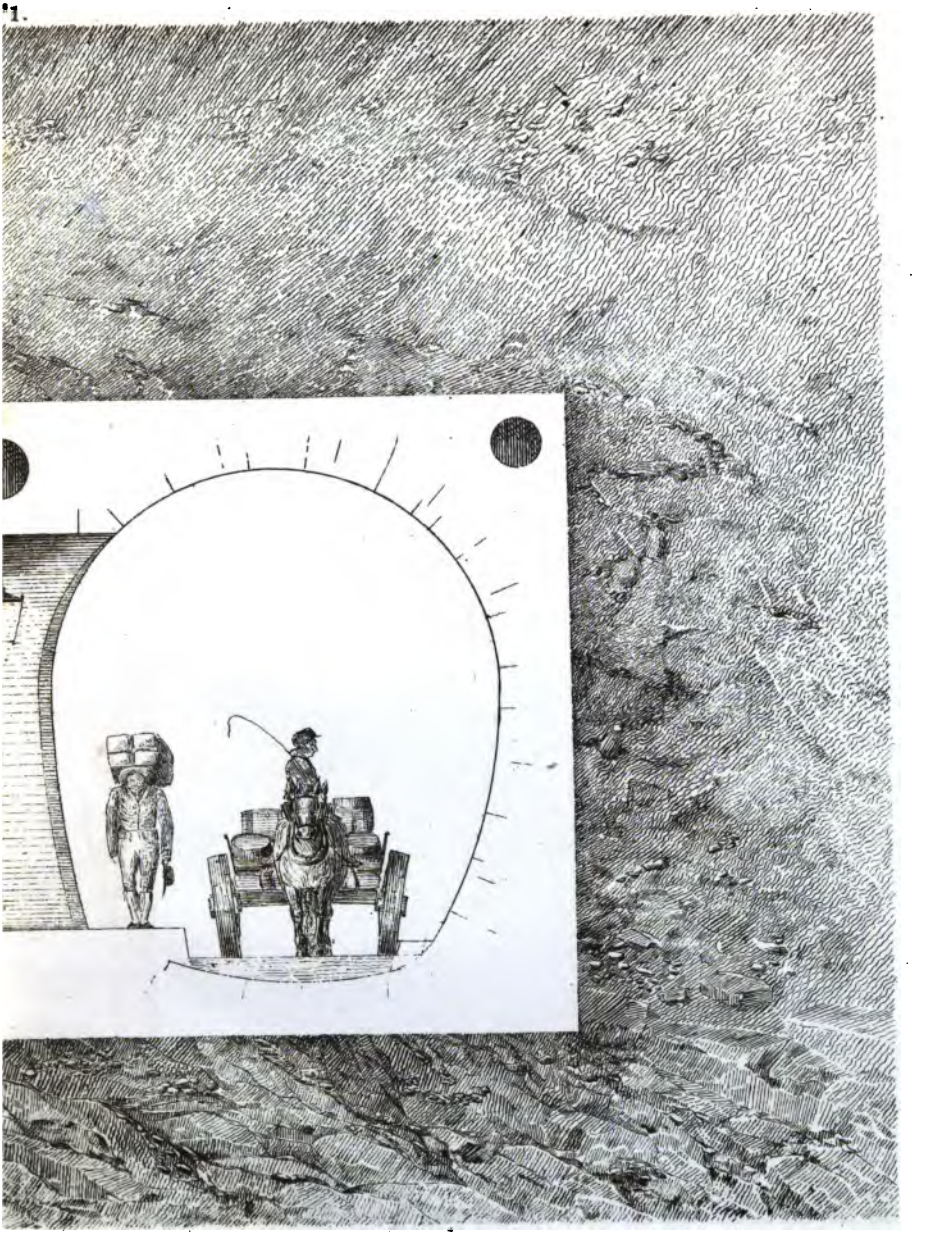
f which the Workmen are represented in operation.



Transverse Section of the body of the I



unnel ; shewing the double Archway.

W. Sheldrick Litho.